

What is claimed is:

1. A method for manufacturing a polymerized toner comprising
a process for forming fine droplets of a polymerizable
monomer composition containing a polymerizable monomer and
a colorant, in an aqueous dispersion medium, and

a process for polymerizing the polymerizable monomer
composition after the process for forming fine droplets;

wherein,

(1) the process for forming fine droplets comprising the
steps of:

preparing an agitating apparatus having

an agitator equipped with an agitating blade or rotor
and

a dispersion supply tank;

providing a polymerizable monomer composition and an
aqueous dispersion medium into the dispersion supply
tank; then,

mixing the polymerizable monomer composition and the
aqueous dispersion medium by the agitator to obtain
a dispersion of fine droplets;

optionally, feeding back the dispersion into the
dispersion supply tank and circulating the dispersion;
and

providing the dispersion to the process for
polymerizing, and

(2) R/θ is 2 or more, and R is 30 m/s or more, wherein the
peripheral velocity (m/s) of the agitating blade or rotor

of the agitator is designated by R , and the number of circulations, represented by $\{\text{throughput of the dispersion (liter/h)} \times \text{agitating time (h)}\} / \{\text{provided quantity of the polymerizable monomer composition and the aqueous dispersion medium (liter)}\}$, is designated by θ .

2. The manufacturing method according to claim 1, wherein the polymerizable monomer composition and the aqueous dispersion medium are mixed together to form the blend thereof before providing them into the dispersion supply tank.

3. The manufacturing method according to claim 2, wherein the blend is formed as to include uniform primary droplets of the polymerizable monomer composition.

4. The manufacturing method according to claim 1, wherein the peripheral velocity R of the agitating blade or rotor is within the range between 30 and 100 m/s.

5. The manufacturing method according to claim 4, wherein the peripheral velocity R of the agitating blade or rotor exceeds 35 m/s.

6. The manufacturing method according to claim 4, wherein the peripheral velocity R of the agitating blade or rotor is 40 m/s or more.

7. The manufacturing method according to claim 1, wherein

the number of circulations θ is within the range between 1 and 20.

8. The manufacturing method according to claim 1, wherein R/θ is within the range between 2 and 100.

9. The manufacturing method according to claim 1, wherein the agitator is a dispersing machine

having a combination of a stator and a rotor that are concentric comb-teeth rings,

rotating the rotor at a high speed to flow the blend, of the polymerizable monomer composition and the aqueous dispersion medium, from the inside of the rotor to the outside of the stator,

and agitating the blend through the gap between the rotor and the stator.

10. The manufacturing method according to claim 9, wherein the combination of the stator and the rotor is placed in a housing and the rotor is driven with an agitating shaft.

11. The manufacturing method according to claim 9, wherein the dispersing machine has the plural combinations of rotors and stators disposed in one to three stages.

12. The manufacturing method according to claim 9, wherein the dispersing machine is a vertical or horizontal dispersing machine with capacity of the peripheral velocity R of the rotor

higher than 35 m/s.

13. The manufacturing method according to claim 9, wherein the internal pressure of the dispersing machine is within the range between 0.01 and 15 MPa.

14. The manufacturing method according to claim 1, wherein the agitator forms the fine droplets by the actions of shearing force, collision force, pressure fluctuation, cavitations, and potential cores, generated between the rotor rotating at a high speed and a screen surrounding the rotor.

15. The manufacturing method according to claim 1, wherein the agitator forms the fine droplets by compressing the dispersion to the internal wall of the agitator with a centrifugal force, to form a liquid film, and to touch the liquid film with the edges of the agitating blade or rotor rotating at an ultra-high speed.

16. The manufacturing method according to claim 1, wherein the fine droplets of the polymerizable monomer composition has a volume average particle diameter of 3 to 10 μm , in the process for forming fine droplets.

17. The manufacturing method according to claim 1, wherein the fine droplets of the polymerizable monomer composition has a particle diameter distribution of 1 to 2, in the process for forming fine droplets.

18. The manufacturing method according to claim 1, wherein the fine droplets of the polymerizable monomer composition are formed in an aqueous dispersion medium containing a colloid of a hardly water-soluble metal hydroxide as a dispersion stabilizer, in the process for forming fine droplets.

19. The manufacturing method according to claim 1, wherein colored polymer particles having

a volume average particle diameter d_v of 4 to 9 μm ,

the ratio of the volume average particle diameter d_v to the number average particle diameter d_p , d_v/d_p , of 1.25 or less, and

the number percentage of particles having a volume average particle diameter d_v of 3 μm or smaller of 8% or less

is obtained in the process for polymerizing.

20. The manufacturing method according to claim 1, wherein core-shell structure colored polymer particles is obtained, in the process for polymerizing, by

polymerizing the polymerizable monomer composition to form colored polymer particles, using the colored polymer particles as core particles, and

further polymerizing a polymerizable monomer for shell in the presence of the core particles to form polymer layer on the surface of the core particles.